User Guide

HDMI Switchers

SW HDMI Series

Two and Four Input HDMI Switchers

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

68-1317-01 Rev. B
06 12

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Avertissement

Alimentations • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'Il y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用 户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过 。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference; the user must correct the interference at his own expense.

NOTE: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.

For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the "**Extron Safety and Regulatory Compliance Guide"** on the Extron website.

Conventions Used in this Guide

Notifications

In this user guide, the following are used:

DANGER: A danger indicates a situation that will result in death or severe injury.

WARNING: A warning indicates a situation that has the potential to result in death or severe injury.

CAUTION: A caution indicates a situation that may result in minor injury.

ATTENTION: Attention indicates a situation that may damage or destroy the product or associated equipment.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the product or application easier.

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C
[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
Esc X1 * X17 * X20 * X23 * X21 CE ←
```

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character "Ø" is used for the number zero and "O" represents the capital letter "o."

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx –t
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

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Trademarks
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Contents

Introduction 1

- About this Guide 1
- About the SW HDMI Series Switchers 1
- Features 1
- Application Diagram 3

Installation 4

- Installation Overview 4
- Rear Panel Features 5
- Wiring the Power Connector (Optional) 6
- Wiring for RS-232 Control 7
- Connecting to the USB Port 8
- Enabling Auto-input Switching 10

Operation 11

- Front Panel Features 11
- Operations 13
  - Powering on the Switcher 13
  - Selecting an Input 13
  - Resetting 13
  - Using the Optional IR 102 Remote Control 14
  - Locking and Unlocking the Front Panel (Executive Mode) 15
  - EDID Modes 15

Remote Communication and Control 19

- Using Simple Instruction Set (SIS) Commands 19
  - Host-to-switcher Communications 19
  - Switcher-initiated Messages 19
  - Error Responses 20
  - Using the Command and Response Table 20
  - Symbol Definitions 20
- Command and Response Table for SIS Commands 22
- Updating Firmware Using Firmware Loader 24
  - Downloading and Installing Firmware Loader 24
  - Downloading the SW HDMI Firmware 24
  - Loading the Firmware to the Switcher 25

Reference Information 29

- Specifications 29
- Part Numbers 31
  - Included Parts 31
  - Accessories 31
  - Cables and Adapters 31
- Mounting the SW HDMI 32
  - Tabletop Use 32
  - Rack Mounting 32
  - Furniture Mounting 34

Introduction

This section gives an overview of the SW HDMI Series switchers. Topics include:

- **About this Guide**
- **About the SW HDMI Series Switchers**
- **Features**
- **Application Diagram**

About this Guide

This guide describes the Extron SW HDMI Series switchers and discusses how to install, configure, and operate them.

In this guide, the term "SW HDMI Series" refers to both the SW2 HDMI and the SW4 HDMI switchers. "Switcher" and "SW HDMI" are used interchangeably to refer to any single unit.

About the SW HDMI Series Switchers

The Extron SW HDMI Series are two and four input, one output, High-definition Multimedia Interface (HDMI) switchers. They allow multiple HDMI signals, including digital video, 3D signals, and embedded multi-channel digital audio to be switched to one compatible display. These switchers support all standard single-link HDMI (up to 225 MHz) and Digital Video Interface (DVI) 1.0 signal formats. They are compatible at 60 Hz with all HDTV resolutions up to 1080p and PC resolutions up to 1920x1200, with 12-bit color, and are fully compliant with High-bandwidth Digital Content Protection (HDCP).

The SW HDMI switchers can be controlled via the front panel, the RS-232 interface, or the optional IR 102 Remote Control. You can select inputs by pressing the front panel buttons, pressing buttons on the IR 102, enabling auto-input switching, or entering Simple Instruction Set (SIS™) commands via RS-232.

Features

- **HDCP authentication** — The SW HDMI switchers check the sources and the display individually for HDCP compliance. HDCP LEDs for each input and the output indicate successful HDCP authentication.
- **Auto-input switching** — The SW HDMI Series can be configured to automatically switch to the highest-numbered active input when the switcher detects a signal.
- **Signal detection LEDs** — Each input and the output are represented by front panel LEDs, which light if a signal is present for the input or output and there is activity on the Transition Minimized Differential Signaling (TMDS) lines.
- **Rack and furniture mounting** — The SW HDMI Series can be mounted on a rack shelf or under a desk or podium with an optional mounting kit.

- **Remote configuration and control** — The switcher can be configured via an RS-232 or USB connection via SIS commands (see "**Using Simple Instruction Set (SIS) Commands**" on page 19).
- **EDID Minder®** — A proprietary EDID (Extended Display Identification Data) management process from Extron, the EDID Minder manages the EDID between a digital display device and one or more input sources. By maintaining continuous EDID communication with all sources, EDID Minder ensures that digital sources power up properly and maintain their video output, whether or not they are actively connected to the digital display device.
- **EDID modes** — Either of the following EDID modes can be selected by SIS commands:
  - **Automatic**, in which the SW HDMI reads the EDID data when a display is connected and stores the data in memory (default mode)
  - **User-assigned**, in which you can assign one of 46 factory-provided files of EDID information to each input. Four undefined memory slots are also provided, to which you can save the EDID of connected displays as additional EDID files. The assigned EDID does not change if a different display device is connected. This mode is useful for trouble-shooting purposes.

  Each time power is applied to the output device or the display is replaced, the SW HDMI either reads the EDID information from the display or reloads the user-assigned EDID information. It then writes the information to non-volatile memory on the inputs. The input devices can read this information as they reboot (see "**EDID Modes**" on page 15 for more information).
- **Output compatibility correction** — The SW HDMI monitors the EDID on the connected output device to ensure it is compatible with the currently selected input signal. The following corrections are made to the signal as necessary each time an input is selected:
  - **Interface format:** If the connected output device is DVI and the selected source is HDMI, the signal is reformatted for DVI. If the output device is an HDMI device, no reformatting is necessary because HDMI is backwards compatible with DVI.
  - **Video color bit depth:** If the connected output device does not support the color bit depth of the selected source signal, it is truncated to the next level down that is supported; for example, 12-bit >10-bit > 8-bit. Bit depth truncation can be forced via SIS commands to always downgrade to 8-bit depth, disabling deep color.
- **IR remote control (optional)** — The hand-held IR 102 Remote Control can control the SW HDMI via infrared signals that it sends to the switcher from a distance of up to 30 feet (9 m).
- **Front panel security lockout (executive mode)** — To prevent unauthorized access to the switchers, the front panel controls can be locked via the front panel buttons or SIS commands (RS-232, USB, and IR control remain available).
- **Input cable equalization** — Automatic input cable equalization compensates for signal loss when long cable assemblies are used.
- **Power supply** — An external 12 VDC, 1 A power supply with a 2-pole captive screw connector accepts 100 to 240 VAC.

Application Diagram

The following diagram shows an example of how an SW HDMI Series switcher can be connected.

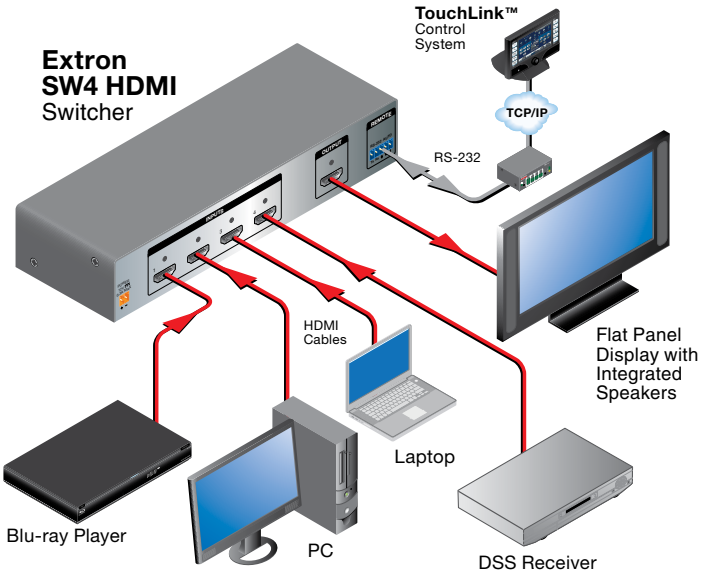


Figure 1. Application Diagram for an SW4 HDMI Switcher

NOTE: HDCP compliant sources require HDCP compliant displays (see the user manual of the source or display device for information on its HDCP compliance).

Installation

This section describes the installation and setup of the SW HDMI Series switchers. Topics include:

- **Installation Overview**
- **Rear Panel Features**
- **Wiring the Power Connector (Optional)**
- **Wiring for RS-232 Control**
- **Connecting to the USB Port**
- **Enabling Auto-input Switching**

Installation Overview

To install and set up the SW HDMI switcher:

1. **Turn off all equipment** and disconnect it from the power source.
2. (Optional) **Mount the switcher** on a rack shelf or furniture (see "**Mounting the SW HDMI**" on page 31).
3. **Connect HDMI input sources** to one or more of the SW HDMI input connectors.
4. **Connect an HDMI output device** to the output connector.
5. **Connect control devices.** Connect your computer to one of the following SW HDMI ports to configure and control the switcher via SIS commands or the Universal Switcher Control Program:
   - **RS-232 port** — Pins 1, 2, and 3 of the Remote port (④ on the **rear panel diagrams** on the next page) for serial RS-232 control. (See "**Wiring for RS-232 Control**" on page 7 for connection procedures.)
   - **Config port** — USB mini B connector (⑥ on the **front panel diagrams** on page 11) for USB control. (See "**Connecting to the USB Port**" on page 8 for connection procedures.)
6. (Optional) **Enable auto-input switching.** Use a jumper to connect pins 4 and 5 of the 5-pole captive screw plug that you plugged into the Remote connector in step **4** (see "**Enabling Auto-input Switching**" on page 10).
7. **Power on the output display.**
8. **Connect power to the switcher** (see "**Powering On the Switcher**" on page 13).
9. **Power on the source devices.**

Rear Panel Features

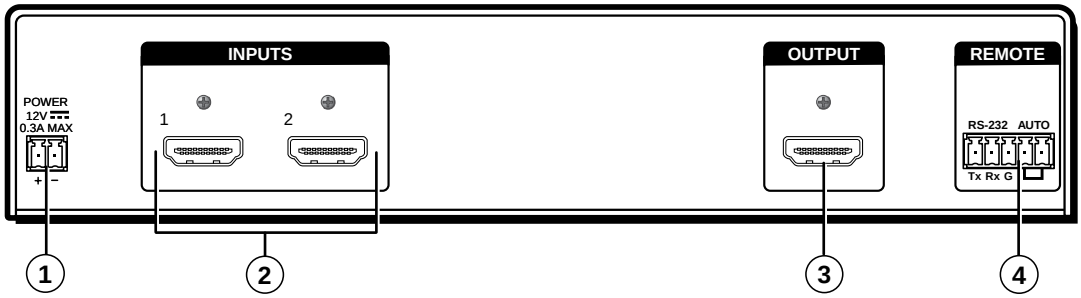


Figure 2. SW2 HDMI Rear Panel

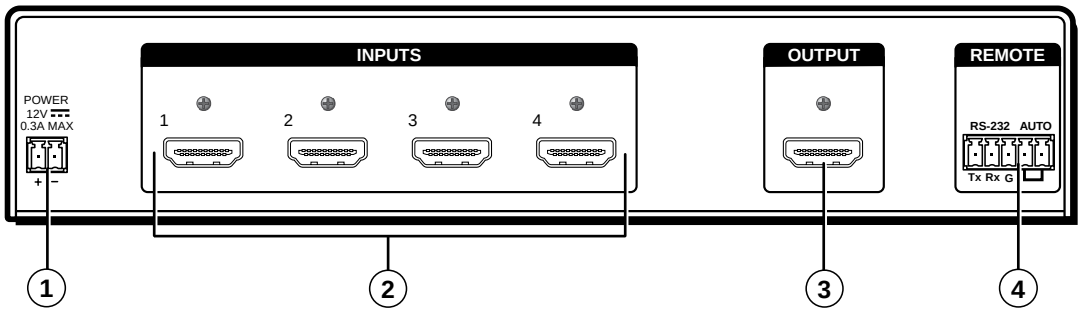


Figure 3. SW4 HDMI Rear Panel

① **Power connector** — Plug the provided external 12 VDC, 1 A power supply into this 2-pole, 3.5 mm captive screw connector and into an AC power outlet.

② **Video input connectors** — Connect HDMI video input sources to these Type A female single-link HDMI connectors. Data rates of up to 6.75 Gbps are supported.

- **LockIt® brackets:** LockIt cable lacing brackets, one for each HDMI input and the output connector, are provided with the SW HDMI. These brackets can be used to secure the HDMI cables to the rear panel connectors, reducing stress on the connectors and preventing signal loss due to loose cable connections. For information on attaching the LockIt brackets, see the *LockIt HDMI Lacing Bracket Installation Guide*, available on the Extron website at **www.extron.com**.
- **EDID information:** By default, EDID is read from the output device and written to switcher memory for each input, allowing the source to see the EDID information for the output device even when the output is switched away from it.

NOTE: If power is recycled to the display, or if a new display is connected, the source may need to be rebooted to read the new EDID.

③ **Video output connector** — Connect an HDMI display device to this female Type A HDMI connector.

The EDID information is read from the connected output device via this connector and is written to memory on each input whenever the output device is connected this port and powered on.

NOTE: The EDID information is also read and stored whenever power is recycled to the connected output device or when the output device is replaced.

④ **Remote and auto-input switching connector** — This 5-pole, 3.5 mm captive screw connector (labeled "Remote") can be used for RS-232 communication with the switcher, including firmware updates, and to enable auto-input switching.

- **To enable RS-232 control**, connect the Tx (transmit), Rx (receive) and G (ground) pins to the serial port of your computer (see "**Wiring for RS-232 Control**" on page 7).
- **To enable auto-input switching**, short pins 4 and 5 of this connector together. In auto-input switch mode, the switcher automatically switches to the highest numbered active input (see "**Enabling Auto-input Switching**"on page 10).

Wiring the Power Connector (Optional)

A 12 VDC, 1 A desktop power supply is provided with the SW HDMI. Should it become necessary to attach a 2-pole captive screw connector to the Extron power supply, follow these instructions:

ATTENTION:

- The power supply must not be permanently fixed to the building structure or similar structures.
- The power supply must not be located within environmental air handling spaces or the wall cavity.
- The installation must be in accordance with the applicable provisions of the National Electrical Code ANSI/NFPA 70, Article 725 and the Canadian Electrical Code, Part 1, Section 16.
- The power supply must be located in the same vicinity as the Extron AV processing equipment in an ordinary location, Pollution Degree 2, secured to a podium, a desk, or an equipment rack within a dedicated closet.
- Always use a power supply specified for the SW HDMI by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the switcher.

WARNING: **Risk of electric shock.** The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.

1. Cut the DC output cord to the length needed.
2. Strip the jacket to expose 3/16 inch (5 mm) of the conductors.

ATTENTION:

- Exposing more than 3/16 inch (5 mm) of the copper wires could allow the stripped wires to touch each other, causing a short circuit. This could result in the external DC power supply overheating and burning.
- Stripping the wires to expose less than the recommended amount may cause them to slide out of the connector too easily, even if they are tightly pinched by the captive screws.
- Do not tin the stripped power supply leads before attaching the captive screw plug to them. Tinned wires are not as secure in the captive screw connectors and can be easily pulled out. They may also break after being bent several times.

3. Slide the leads into the supplied 2-pole captive screw plug and secure them, using a small screwdriver.

4. To verify the power cord polarity before connecting the plug, connect the power supply with no load and check the output with a voltmeter.
5. Use the supplied tie wrap to strap the power cord to the extended tail of the connector.

The figure below shows how to wire the connector.

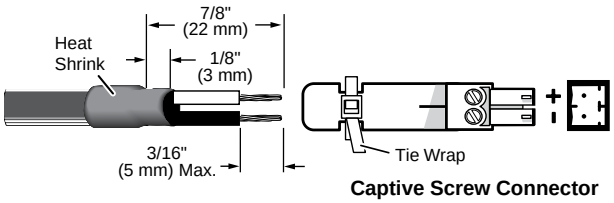


Figure 4. Power Connector Wiring

Wiring for RS-232 Control

Use a female 9-pin D to bare wire RS-232 cable or a universal control cable (UC50', UC100', or UC200') to connect your computer or control system to the RS-232 pins of the Remote connector.

1. Wire the unterminated end of the RS-232 cable to the provided 5-pole captive screw plug as described below. Connect the transmit, receive, and ground wires of the cable to the **first three pins** on the connector, starting at the left:
   - Connect the transmit wire to pin 1, which plugs into the Tx (transmit) port.
   - Connect the receive wire to pin 2, which plugs into the Rx (receive) port.
   - Connect the ground wire to pin 3, which plugs into the G (ground) port.
2. Plug the 5-pole connector into the Remote receptacle on the rear panel of the switcher.
3. Connect the other end of the cable to the appropriate computer or control system connector.

The figure below shows how to wire this shared connector for RS-232.

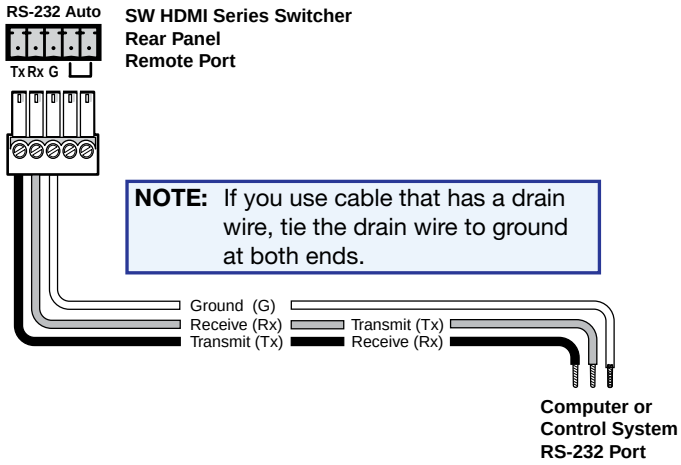


Figure 5. Remote Connector Pin Assignments

Connecting to the USB Port

The mini B USB port is located on the SW HDMI front panel. It can be used to configure the switcher via SIS commands.

1. Connect a USB A to mini B cable between the USB Config port on the switcher front panel and the USB port on your computer.

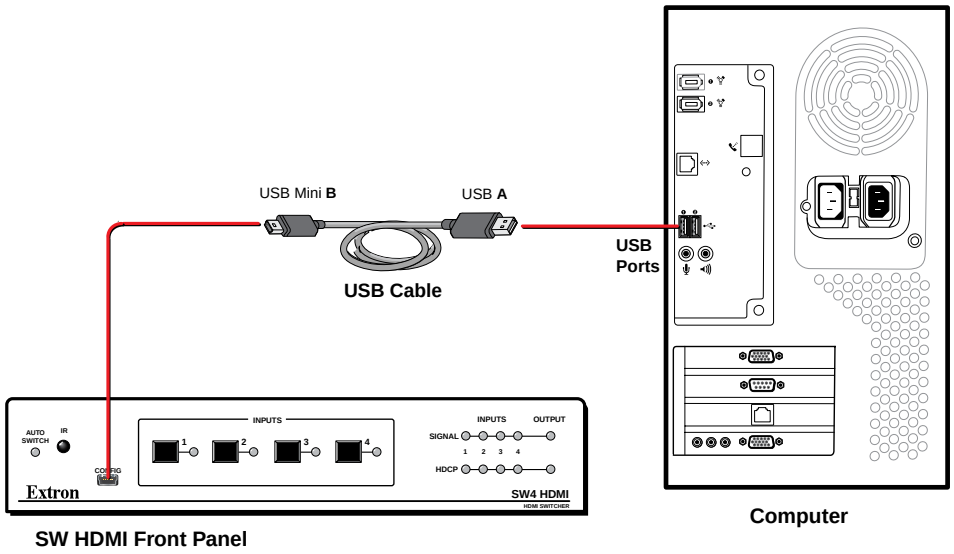


Figure 6. USB Port Connection

2. If this is the first time you have connected an SW HDMI to this USB port on your computer, the Found New Hardware Wizard opens. On the first screen, specify whether you want the computer to connect to Windows Update in order to search the web for the driver that it needs to communicate with the switcher via the USB port. This is not necessary if the USB driver already exists on your computer.

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission).
Read our privacy policy
Can Windows connect to Windows Update to search for software?
Yes, this time only
Yes, now and every time I connect a device
No, not this time
Click Next to continue.
< Back
Next >
Cancel

Figure 7. Found New Hardware Wizard Opening Screen

- Select the **Yes, this time only** radio button if you want your computer to connect to Windows Update only this one time.
- Select **Yes, now and every time I connect a device** if you want the computer to automatically connect to Windows Update to search the web every time the switcher is connected to this USB port.
- Select **No, not this time** if you do not want the computer to connect to Windows Update to search the web at this time (for example, if the driver is already on your computer).

3. Click **Next**. On the next screen, select the **Install the software automatically (Recommended)** radio button, then click **Next** (you do not need to insert a disc).

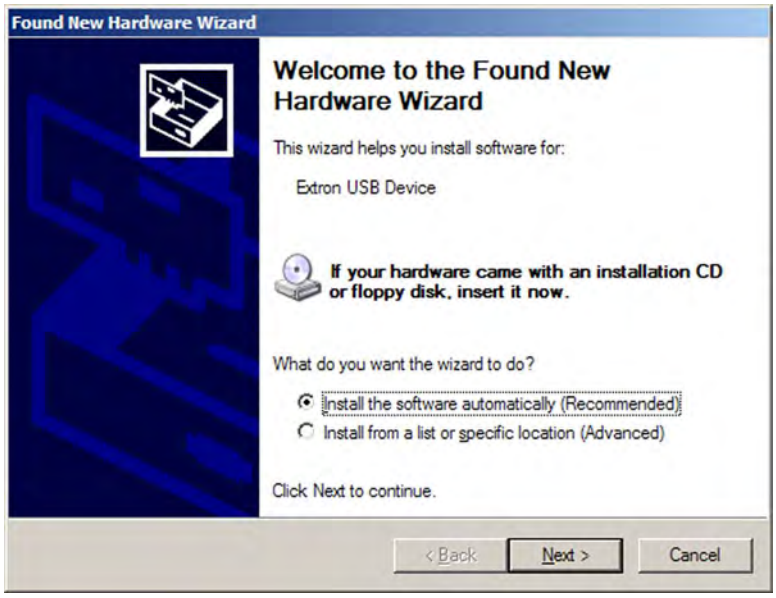

Found New Hardware Wizard
Welcome to the Found New Hardware Wizard
This wizard helps you install software for:
Extron USB Device
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

Figure 8. Selecting the Radio Button to Install the USB Driver Automatically

Your computer locates the driver needed for it to communicate with the SW HDMI via the USB port and loads it to the computer hard drive.

4. When the Completed screen appears, click **Finish** to close the wizard.

> **NOTE:** This wizard appears only the **first** time you connect the SW HDMI to each USB port. You do not see the wizard again unless you connect the switcher to a different USB port on your computer.

5. Configure the switcher as desired using SIS commands (see the **Remote Communication and Control** section, beginning on page 19, for information on available commands).

Enabling Auto-input Switching

You can set up the SW HDMI to automatically select the active, connected input based on detection of an active video signal (TMDS clock activity). If two or more inputs are active, the input with the highest number is selected (for example, input 4 on an SW4 HDMI switcher). When auto-input switching is in effect, the green Auto Switch LED on the front panel lights and the front panel input selection buttons are disabled.

To enable auto-input switching:

1. Cut a small piece of wire to use as a jumper.
2. Insert the ends of the wire into slots 4 and 5 of the provided 5-pole captive screw plug, connecting pins 4 and 5 together.
3. Use a small screwdriver to tighten the two screws above pin slots 4 and 5 of the plug so that the jumper wire ends remain securely in place (see the illustration at right).
4. Insert the plug into the 5-pole Auto-SW captive screw connector on the rear panel.

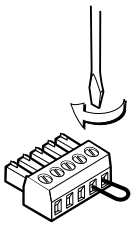


Figure 9 shows an SW4 HDMI with a jumper connecting pins 4 and 5 to enable auto-input switching.

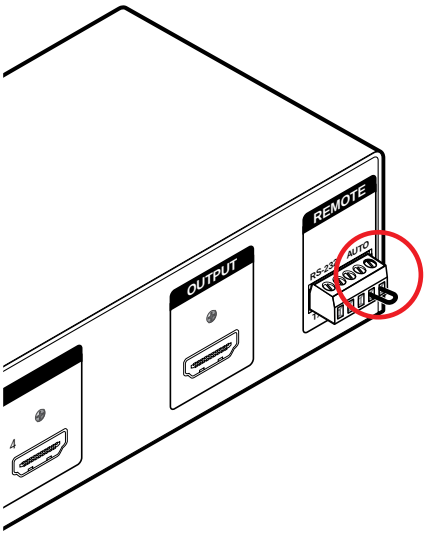


Figure 9. Auto Pins of the Remote Connector with a Jumper Installed

Auto-input switching remains in effect as long as the jumper wire connects the two pins and the 5-pole captive screw plug is attached to the Remote connector.

Operation

This section describes the operation of the SW HDMI Series switchers. Topics include:

- **Front Panel Features**
- **Operations**

Front Panel Features

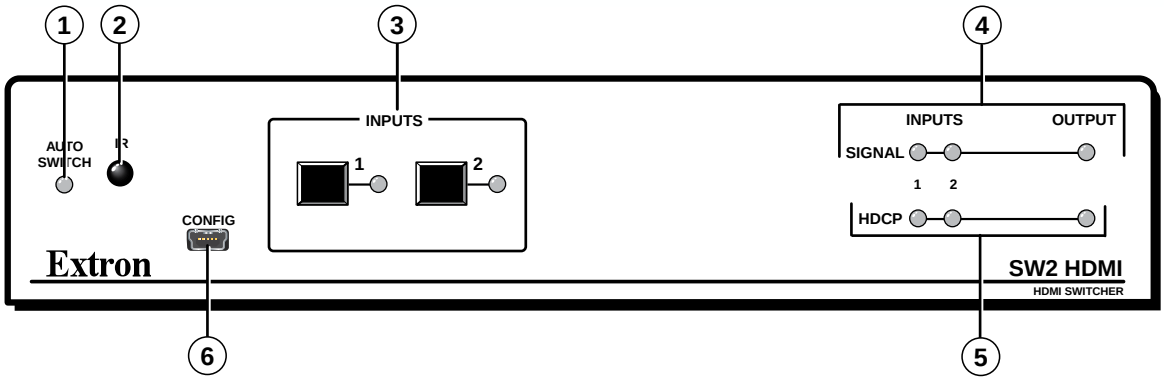


Figure 10. SW2 HDMI Front Panel

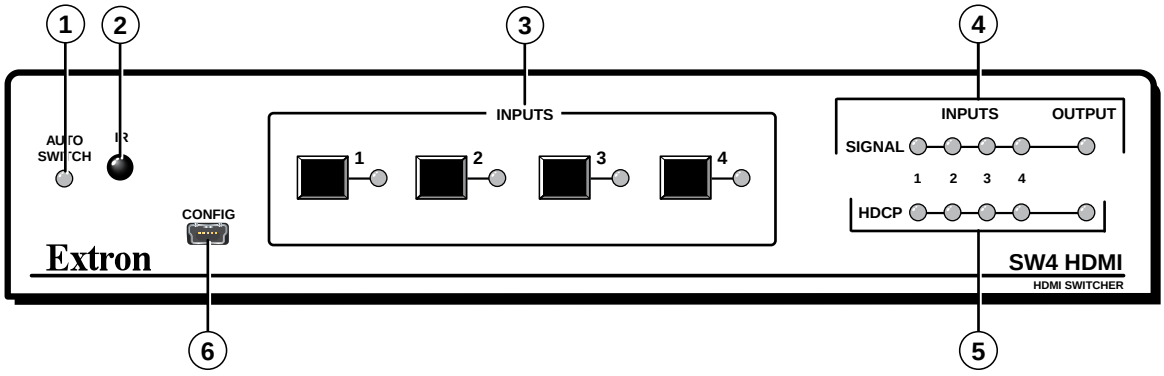


Figure 11. SW4 HDMI Front Panel

① **Auto Switch LED** — This LED lights when auto-input switching is in effect (see "**Enabling Auto-input Switching**" on page 10 for the procedure to set up automatic input selection).

② **IR receiver port** — This sensor detects infrared signals from the optional IR 102 remote control at a distance of up to 30 feet and within 40 degrees off the axis (see "**Using the Optional IR 102 Remote Control**" on page 14 for more information).

③ **Input selection buttons and LEDs** — Press these buttons to select input 1 or 2 or inputs 1 through 4, depending on your model. The LED at the right of each button lights when the corresponding input is selected. These buttons are disabled if auto-input switching is in effect; however, the LEDs continue to light to indicate the selected input.

The input buttons are also used for enabling front panel lockout (executive mode) and to initiate a system reset (see "**Locking and Unlocking the Front Panel (Executive Mode)**" on page 15 and "**Resetting**" on the next page).

④ **Signal status LEDs** —

- **Inputs:** Each input has a corresponding numbered Signal LED, which illuminates when a source is connected to the input connector and TMDS clock activity is detected on it.

  NOTE: If the source device connected to the selected input is HDCP encrypted (requires HDCP authentication), the corresponding signal LED may not light unless HDCP has been authenticated.

- **Output:** The Output Signal LED lights when a TMDS signal is being transmitted to the connected output device.

⑤ **HDCP status LEDs** —

- **Inputs:** Each input has a corresponding numbered HDCP LED. If the connected source requires HDCP, the corresponding LED illuminates when authentication is successful.

  NOTE: HDCP is authenticated on each input regardless of the currently selected source.

- **Output:** The Output HDCP LED lights if the currently selected input requires HDCP and the connected output device has been successfully authenticated.

  NOTE: HDCP is re-authenticated on the output whenever a new input is selected.

⑥ **Config port** — Connect a USB cable (USB A to mini B) between your computer and this female USB mini B port to configure and control the switcher via SIS commands or the Universal Switcher Control Program and to update the firmware.

Operations

Powering on the Switcher

To power on the SW HDMI:

1. Connect all input and output devices to the rear panel connectors on the switcher (see "**Rear Panel Features**" on page 5 for the rear panel connections).
2. Power on the display.
3. Plug the power supply into the 2-pole captive screw power connector on the switcher rear panel. After approximately 4 seconds, the following takes place:
   - The unit performs a self-test, during which the front panel Auto Switch, Input, Signal, and HDCP LEDs each blink once in sequence from left to right. When the self-test completes, the LED for the most recently selected input remains lit.
   - The switcher reads the available EDID information from the connected output device and writes it to memory on each input. When power is removed, these settings remain in memory and are in effect when power is reapplied.

   NOTE: If EDID Minder is in automatic mode, the settings revert to the default EDID unless a display is connected to the HDMI output (see "**EDID Modes**" on page 15).
4. Power on the input devices.

Selecting an Input

To switch (tie) an input to the output, press the desired input button on the front panel (ensure that auto-input switching is not enabled). The LED corresponding to the selected input button lights.

- The lit front panel input LED indicates the selected input. The LED remains lit until a new input is selected.
- Only one input can be switched to the output at a time.

Other ways to select an input include using SIS commands (see the **Input Selection** commands on page 22) or optional IR remote control (see "**Using the Optional IR 102 Remote Control**" on the next page).

Resetting

To reset the switcher to its factory default settings:

1. Press and hold the Input 1 button while power is being applied to the unit.
2. Continue holding the Input 1 button until the power-up sequence completes.

Using the Optional IR 102 Remote Control

The optional hand-held IR 102 Remote Control (part number 70-224-10) lets you remotely perform functions that are also available through the front panel buttons and SIS commands.

The IR receiver port on the front panel is located to the right of the Auto Switch LED. It receives signals from the remote control if they are sent from within a 40-degree arc to the right or left of direct line of sight between the remote control and the switcher receiver, and from no more than 30 feet (9 m) away (see figure 12).

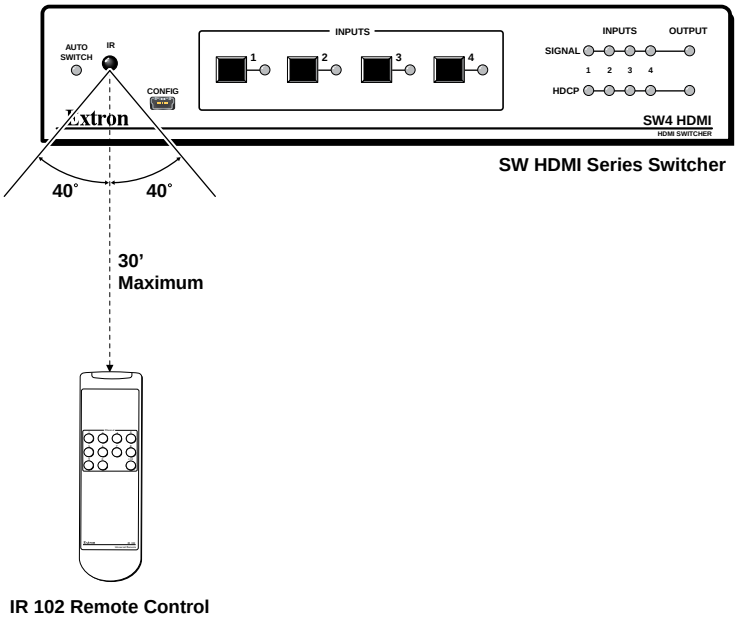
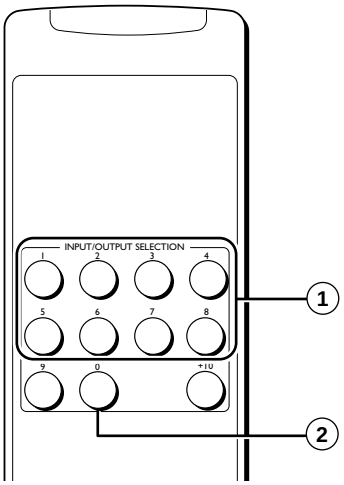


Figure 12. Area for Remote Signal Reception

Remote control buttons



On the IR 102 remote control, buttons 1 and 2 or 1 through 4 (depending on your model) select inputs. Button 0 mutes (deselects) all inputs.

① **Input Selection buttons** — Press one of these buttons to select an input.

② **Input mute button (0)** — Press this button to deselect all inputs, effectively muting the output.

Locking IR remote access

The SW HDMI can be set to lock out users from using the IR 102 Remote Control to control the switcher. Remote access can be enabled and disabled via SIS commands (see the **Front Panel IR Receiver Enable and Disable** commands on page 23 in the Command and Response Table for SIS Commands). When remote access is set to Off, all switcher controls remain available through the SW HDMI front panel.

Locking and Unlocking the Front Panel (Executive Mode)

Front panel lock mode disables all front panel controls, locking out users from those functions (RS-232, USB, and IR control remain available). Putting the switcher in lock mode enhances security by protecting against inappropriate or accidental changes to settings. If a front panel button is pressed during lock mode, all front panel LEDs blink once.

To lock or unlock the front panel, press and hold Input buttons 1 and 2 simultaneously for 3 seconds, then release. The front panel LEDs blink three times, indicating that executive mode has been enabled or disabled (see figure 13).

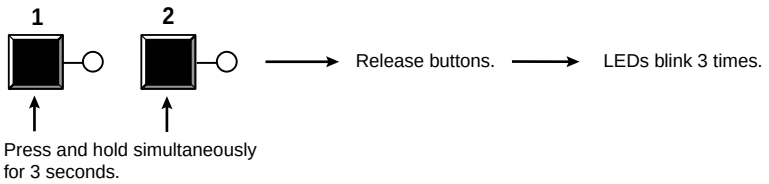


Figure 13. Enabling or Disabling Executive Mode

EDID Modes

The SW HDMI switchers utilize the EDID Minder, which maintains EDID communication to all connected sources, whether or not any of the sources are selected. EDID information consists of the display resolution, refresh rate, data rate, supported audio formats, and other features. By factory default, the EDID stored on all inputs contains information for a native resolution of 720p @ 60 Hz, 2-channel audio.

EDID Minder can be configured in two modes: automatic and user-assigned.

Automatic EDID mode

In automatic mode, the switcher automatically stores EDID from the connected display and communicates it to the inputs; no other configuration is required. This is the default mode.

- **Reading and storage process** — Each time a display is connected to the HDMI output while the power is connected, the SW HDMI reads the EDID from the display device and stores it in memory for each input. This information is retained after the display is disconnected; however, it is overwritten if a new display is connected or a user assigned EDID file is selected.
- **Default EDID** — When the switcher is in automatic mode, the default EDID (720p @ 60 Hz) is stored at each input until a display is connected, at which time it is overwritten.

User-assigned EDID mode

In this mode, you can select an EDID file that is stored on the switcher at the factory. The selected EDID is stored in memory for the inputs and is not overwritten; the switcher does not automatically obtain EDID information from the display.

You may want to use this mode if there is a problem with automatic communication of the EDID information from the attached display, and you want to ensure that the correct information is stored on the inputs. Also, because this mode disables automatic EDID reading and storage, you can retain one set of EDID information on the inputs and not have it changed when another display is connected.

- **Factory-loaded EDID files** — You can select from a list of 46 EDID files that are loaded on the switcher at the factory. Each EDID file contains a unique native resolution and audio support (if applicable). The **EDID table** on the next page shows the EDID files that are provided with the switcher.
- **User-loaded EDID file** — In addition to the 46 EDID files provided with the switcher, four empty memory locations (47 through 50) are provided. To these slots you can save the EDID of the display that is currently connected to the output port of the switcher. Any of these four files can then be selected as one of the user-assigned EDID files.

Changing the EDID mode

EDID modes can be switched only by SIS command. By default, the SW HDMI is in automatic EDID mode. To change between automatic and user-assigned modes, enter the following SIS command:

Esc A * X4 EDID ←

where X4 is Ø (automatic mode) or the number of the user-assigned EDID file that you want to select (1 through 5Ø) (see the "**Remote Communication and Control**" section beginning on page 19 for instructions for entering SIS commands via RS-232 or USB).

NOTE: The switcher remains in the selected EDID mode after power is recycled. If the unit is reset to factory defaults, it reverts to automatic mode.

See the **table on the next page** for a list of supported EDIDs.

EDID table

EDIDs listed in this table are arranged according to video format: DVI or HDMI. Within each format grouping, they are listed by rate type: PC or HDTV. Within each rate type grouping, the EDIDs are listed in order of resolution.

X4	Native Resolution	Refresh Rate	Rate Type[1]	Video Format[2]	Audio Type[3]	Pixel Clock
0	Automatic (output)					
1	800 x 600	60 Hz	PC	DVI	n/a	40 MHz
2	1024 x 768	60 Hz	PC	DVI	n/a	65 MHz
3	1280 x 720	60 Hz	PC	DVI	n/a	74.25 MHz
4	1280 x 768	60 Hz	PC	DVI	n/a	79.5 MHz
5	1280 x 800	60 Hz	PC	DVI	n/a	83.5 MHz
6	1280 x 1024	60 Hz	PC	DVI	n/a	108 MHz
7	1360 x 768	60 Hz	PC	DVI	n/a	85.5 MHz
8	1366 x 768	60 Hz	PC	DVI	n/a	86 MHz
9	1440 x 900	60 Hz	PC	DVI	n/a	121.75 MHz
10	1400 x 1050	60 Hz	PC	DVI	n/a	106.5 MHz
11	1680 x 1050	60 Hz	PC	DVI	n/a	97.75 MHz
12	1600 x 900	60 Hz	PC	DVI	n/a	162 MHz
13	1600 x 1200	60 Hz	PC	DVI	n/a	119 MHz
14	1920 x 1080	60 Hz	PC	DVI	n/a	148.5 MHz
15	1920 x 1200	60 Hz	PC	DVI	n/a	154 MHz
16	2048 x 1080	60 Hz	PC	DVI	n/a	148.5 MHz
17	800 x 600	60 Hz	PC	HDMI	2-Ch	40 MHz
18	1024 x 768	60 Hz	PC	HDMI	2-Ch	65 MHz
19	1280 x 768	60 Hz	PC	HDMI	2-Ch	79.5 MHz
20	1280 x 800	60 Hz	PC	HDMI	2-Ch	83.5 MHz
21	1280 x 1024	60 Hz	PC	HDMI	2-Ch	108 MHz
22	1360 x 768	60 Hz	PC	HDMI	2-Ch	85.5 MHz
23	1366 x 768	60 Hz	PC	HDMI	2-Ch	86 MHz
24	1440 x 900	60 Hz	PC	HDMI	2-Ch	121.75 MHz
25	1400 x 1050	60 Hz	PC	HDMI	2-Ch	106.5 MHz
26	1680 x 1050	60 Hz	PC	HDMI	2-Ch	97.75 MHz
27	1600 x 900	60 Hz	PC	HDMI	2-Ch	162 MHz
28	1600 x 1200	60 Hz	PC	HDMI	2-Ch	119 MHz
29	1920 x 1200	60 Hz	PC	HDMI	2-Ch	154 MHz
30	1248 x 1080	60 Hz	PC	HDMI	2-Ch	148.5 MHz
31	480p	60 Hz	HDTV	HDMI	2-Ch	27 MHz
32	576p	50 Hz	HDTV	HDMI	2-Ch	27 MHz
33	720p	50 Hz	HDTV	HDMI	2-Ch	74.25 MHz
34	**720p (default)**	**60 Hz**	**HDTV**	**HDMI**	**2-Ch**	**74.25 MHz**
35	1080i	50 Hz	HDTV	HDMI	2-Ch	74.25 MHz
36	1080i	50 Hz	HDTV	HDMI	2-Ch	74.25 MHz
37	1080p	50 Hz	HDTV	HDMI	2-Ch	148.5 MHz
38	1080p	60 Hz	HDTV	HDMI	2-Ch	148.5 MHz
39	480p	60 Hz	HDTV	HDMI	Multi-Ch	27 MHz
40	576p	50 Hz	HDTV	HDMI	Multi-Ch	27 MHz
41	720p	50 Hz	HDTV	HDMI	Multi-Ch	74.25 MHz
42	720p	60 Hz	HDTV	HDMI	Multi-Ch	74.25 MHz
43	1080i	50 Hz	HDTV	HDMI	Multi-Ch	74.25 MHz
44	1080i	60 Hz	HDTV	HDMI	Multi-Ch	74.25 MHz
45	1080p	50 Hz	HDTV	HDMI	Multi-Ch	148.5 MHz
46	1080p	60 Hz	HDTV	HDMI	Multi-Ch	148.5 MHz
47	User-loaded slot 1					
48	User-loaded slot 2					
49	User-loaded slot 3					
50	User-loaded slot 4					

[1, 2, 3] See "**Footnotes for the EDID table**" on the next page.

Footnotes for the EDID table

The following footnotes apply to the EDID table on the previous page:

[1]Rate type

- PC: These are primarily VESA standard computer rates, based on the most commonly used native resolutions. They are designed to be used with computer sources.
- HDTV: These are video rates standardized by SMPTE and CEA. They are designed to be used with video and computer sources.

[2]Video format

- DVI: These are 128-byte EDID files, which specify a DVI sink. They do not contain an extension block.
- HDMI: These are 256-byte EDID files, each containing a CEA extension block. They each specify an HDMI sink device with audio support.

[3]Audio type

- n/a: These are DVI formatted EDID files; therefore, they do not support audio.
- 2-Ch: These are HDMI formatted EDID files with support for basic 2-channel (stereo) audio.
    - LPCM (2-Ch)
- Multi-Ch: These are HDMI formatted EDID files with support for multiple audio formats up to 8 channels.
    - LPCM (2-Ch)
    - LPCM (8-Ch
    - Dolby® Digital (6-Ch)
    - DTS® (7 Ch)
    - Dolby Digital Plus (8-Ch)
    - DTS-HD (8-Ch)
    - Dolby TrueHD (8-Ch)

Remote Communication and Control

This section describes remote operation of the SW HDMI switchers. Topics include:

- **Using Simple Instruction Set (SIS) Commands**
- **Updating Firmware Using Firmware Loader**

Using Simple Instruction Set (SIS) Commands

The SW HDMI can be remotely set up and controlled via Extron SIS commands that are issued from a host computer or other device, such as a control system. SIS commands can be issued via RS-232 from the computer serial port to the rear panel Remote port, or via USB from the computer USB port to the front panel Config port. (See "**Wiring for RS-232 Control**" on page 7 or "**Connecting to the USB Port**" on page 8 to connect to these ports.)

Host-to-switcher Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. You can enter these commands from your computer using a communication software program such as Extron DataViewer or HyperTerminal. When the switcher determines that a command is valid, it executes the command and sends a response to the host device.

Most responses from the SW HDMI to the host computer end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Switcher-initiated Messages

When a local event such as a front panel selection or a change in signal status takes place, the switcher responds by sending a message to the host, indicating what selection was entered. No response is required from the host.

The following switcher-initiated message is displayed:

`(C) Copyright 20nn, Extron Electronics HDMI Switcher Series, Vn.nn, 60-641-nn`

The switcher sends the copyright message when it first powers on. V*n.nn* is the firmware version number; `60-641-`*nn* is the switcher part number.

NOTE: This message is displayed only at power-up with an RS-232 connection.

Error Responses

If the switcher is unable to execute a command it receives because the command is invalid or contains invalid parameters, the switcher returns an error response to the host. The following error response codes can be sent:

E0 1 – Invalid input channel number (out of range)
E0 6 – Invalid input selection during auto-input switching
E1 0 – Invalid command
E13 – Invalid value (out of range)

Using the Command and Response Table

The **command and response table**, starting on page 22, lists valid ASCII and hexadecimal command codes, the switcher responses to the host, and a description of the command function or the results of executing the command.

The conversion table below is for use with the command and response table.

Space →

ASCII to Hex Conversion Table										Esc	1B	CR	0D	LF	0A
	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

Figure 14. ASCII to Hex Conversion Table

Symbol Definitions

↵ = CR/LF (carriage return with line feed) (hex 0D 0A)

← = Soft carriage return (no line feed)

• = Space

Esc = <Escape> key

X1 = Input number
0 through the maximum number of inputs on the unit (2 or 4)
0 = Deselect (mute) all inputs

X2 = Mute on or off
0 = Mute off (unmuted)
1 = Mute on (muted)

X3 = Video color bit depth mode
0 = Automatically truncate based on output
1 = Force truncation to 8-bit

X4 = EDID mode and file selection
0 = Automatic mode (default): EDID of the connected display is detected and passed to the inputs.
1-46 = Factory-supplied EDID number (For a description of available EDID files, see the "**EDID table**" on page 17.)
47-50 = User-assigned EDID

X5 = Current EDID information in hexadecimal format (128 or 256 bytes of hex data)

X6 = Native resolution and refresh rate (translated from hexadecimal)

X7 = Firmware version (to the second decimal place)

X8 = Front panel lockout enabled or disabled
- Ø = Front panel unlocked
- 1 = Front panel locked

X9 = HDCP requirement
- Ø = HDCP not required
- 1 = HDCP required

X10 = Signal status
- Ø = no signal detected
- 1 = signal detected

X11 = On and off or enabled and disabled status
- Ø = off or disabled
- 1 = on or enabled

NOTE: Unless otherwise indicated, commands are ***not*** case-sensitive.

Command and Response Table for SIS Commands

Command	ASCII Command (Host to Switcher)	Response (Unit to Switcher)	Additional Description
Input Selection			
Select input	X1 !	In X1 • All ↵	Select input X1. X1 = input number: Ø through the highest number of inputs on the switcher (2 or 4). Ø deselects (mutes) all inputs
Video Muting			
Video mute	X2 B	Vmt X2 ↵	Mute the video signal.
View video mute status	B	X2 ↵	Show video muting status X2. For X2: 1 = muted; Ø = unmuted
Audio Muting			
Audio mute	X2 Z	Amt X2 ↵	Mute the audio signal.
View audio mute status	Z	X2 ↵	Show audio muting status X2. For X2: 1 = muted; Ø = unmuted
Video Color Bit Depth			
Set video color bit depth mode	Esc V X3 * BITD ←	Bitd V X3 ↵	Select color bit depth mode X3. For X3: Ø = automatic, based on the EDID of the connected output. 1 = Force truncation to 8-bit.
View audio mute status	Z	X2 ↵	
Signal Status			
Request status of all signals	Esc LS ←	Sig X10 • X10 * X10 ↵ *or* Sig X10 • X10 • X10 • X10 * X10 ↵	Show signal presence or absence for all inputs and the output. For X10: Ø = no signal detected 1 = signal detected
Request HDCP status	Esc HDCP ←	HDCP X9 ↵	Show HDCP status X9 for all inputs. For X9: Ø = HDCP not required; 1 = HDCP required
EDID Minder			
Assign EDID to inputs	Esc A * X4 EDID ←	EDID A X4 ↵	Select an EDID file for all inputs. X4 = EDID file location number (see below): Ø = Automatic mode (default): EDID of the connected display is detected and passed to the inputs. 1 – 46 = Factory-supplied EDID (see the **EDID table** on page 17). 47 – 5Ø = User-loaded EDID
Example:	Esc A * 9 EDID ←	EDID A Ø9 ↵	Select EDID file 9 (1440 x 900 @ 60 Hz) to be stored in memory for the inputs.
View EDID assignment	Esc A * EDID ←	X4 ↵	Show the number (X4) of the EDID file currently assigned to the inputs.
View EDID in hex format	Esc R * EDID ←	X5 ↵	View the current EDID assignment in hexadecimal (256 bytes). X6 = current EDID information in hex code.

Command	ASCII Command (Host to Switcher)	Response (Unit to Switcher)	Additional Description
EDID Minder (continued)			
Save display EDID to user location	Esc S * X4 EDID ←	EDID S X4 ↵	Store the EDID of the connected display as user-assigned EDID file X4. X4 = 47 through 50.
View EDID native resolution	Esc N * EDID ←	X6 ↵	Show native resolution and refresh rate X6 from current EDID selection.
Example	Esc N * EDID ←	1600x1200 @ 60 Hz ↵	
Front Panel Lockout			
Enable or disable lock mode	X8 X	Exe X8 ↵	Select front panel lock mode X8. For X8: 1 = front panel locked 0 = front panel unlocked (default)
View lockout status	X	X8↵	Show executive mode On or Off status.
Front Panel IR Receiver Enable and Disable			
Enable and disable IR receiver	X11 * 65#	IRDisable X11 ↵	Disable the IR remote receiver on the front panel from receiving signals from the IR remote control.
View IR status	65#	X11 ↵	View IR receiver status X11. For X11: 0 = IR Disable feature is off (IR enabled). 1 = IR Disable feature is on (IR disabled).
Information Requests			
Request information	I	V X1 • F X4 • Vmt X2 • Amt X2 ↵ Show the selected input, EDID selection, video muting status, and audio muting status. X1 = input number: 1 through highest number of inputs available. X2 = video or audio mute status: 1 = muted; 0 = unmuted X4 = Current EDID (1 through 50) 0 = Automatic (no EDID selected)	
Example:	I	V4 • F2 • Vmt0 • Amt0 ↵ On an SW4 HDMI, input 4 is selected, EDID 2 (1024x768 @ 60 Hz) is selected, and neither the video nor the embedded audio is muted.	
Request part number	N	60-*nnn*-*nn* ↵	Show the part number of the switcher (see "**Included Parts**" on page 31 for model part numbers).
Query firmware version	Q	X7 ↵	Show firmware build number X7, expressed to the second decimal place.
Example:	Q	1.01 ↵	
Query auto-input switching status	72#	Asw X11 ↵	Show status of auto-input switching. For X11: 0 = disabled; 1 = enabled
Resetting			
Reset	Esc ZXXX ←	Zpx ↵	Reset the switcher to its factory default values.
Uploading Firmware			
Upload firmware	Esc Upload ←	...go Upl ↵	Upload a new firmware version from the computer. Upl appears after the upload is complete.

Updating Firmware Using Firmware Loader

Updates to the SW HDMI Series firmware are made available periodically via the Extron website. You can find out what version of firmware is currently loaded on your switcher by entering the SIS **Q** command via the RS-232 or USB interface (see "**Using Simple Instruction Set (SIS) Commands**"on page 19 for the procedure for entering SIS commands).

Downloading and Installing Firmware Loader

Extron recommends using the Firmware Loader software to update the firmware on the SW HDMI. If you do not already have Firmware Loader installed on your computer, download it as follows:

1. Go to the Extron website at **www.extron.com** and click the **`Download`** tab.
2. On the Download Center screen, click the **`Software`** link on the left sidebar menu.
3. On the next Download Center screen, locate Firmware Loader and click its **`Download`** link.

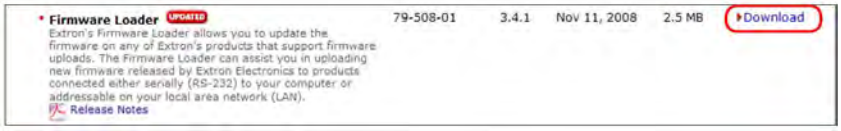

Firmware Loader
UPDATED
Extron's Firmware Loader allows you to update the firmware on any of Extron's products that support firmware uploads. The Firmware Loader can assist you in uploading new firmware released by Extron Electronics to products connected either serially (RS-232) to your computer or addressable on your local area network (LAN).
Release Notes
79-508-01
3.4.1
Nov 11, 2008
2.5 MB
Download

Figure 15. Firmware Loader Download Link

4. On the next screen, enter the requested information, then click the **`Download fw_loader_v`*`nxnxn`*`.exe`** button (where *n* is the Firmware Loader version number).
5. Follow the instructions on the rest of the download screens to save the executable Firmware Loader installer file to your computer. Note the folder to which the file was saved.
6. In the file browser, locate the downloaded executable installer file and double-click it to open it.
7. Follow the instructions on the Installation Wizard screens to install Firmware Loader on your computer. Unless you specify otherwise, the installer program places the Firmware Loader file, FWLoader.exe, at `c:\Program Files\Extron\FWLoader`.

Downloading the SW HDMI Firmware

To obtain the latest version of firmware for the SW HDMI:

1. Visit the Extron website (**www.extron.com**), click the **`Download`** link at the top of the page, then click the **`Firmware`** link on the left sidebar menu.

Figure 16. Firmware Link on the Download Tab

2. On the next Download Center screen, click the SW HDMI Series **`Download`** link.
3. On the next screen that appears, enter the requested user information, then click the **`Download`** button.

4. Follow the instructions on the rest of the download screens to save the executable firmware file to your computer. Note the folder to which the file was saved.
5. In the file browser, locate the downloaded executable file, and double-click it to open it.
6. Follow the instructions on the Installation Wizard screens to install the new firmware on your computer. A Release Notes file, giving information on what has changed in the new firmware version, and a set of instructions for updating the firmware are also loaded.

Loading the Firmware to the Switcher

To load a new version of firmware to the switcher using Firmware Loader, connect your computer serial port to the first three pins of the switcher Remote port (see "**Wiring for RS-232 Control**" on page 7 for information on connecting to the serial port).

1. If you have not already done so, download and install the Firmware Loader executable installer file to your computer (see "**Downloading and Installing Firmware Loader**" on the previous page).
2. If necessary, download the latest version of SW HDMI firmware and install it on your computer (see "**Downloading the SW HDMI Firmware**" on the previous page).
3. Open the Firmware Loader via your desktop **Start** menu by making the following selections:

   Start > **All Programs** > **Extron Electronics** > **Firmware Loader** > **Firmware Loader**

   The Firmware Loader window opens with the Add Device window displayed in front of it.
4. On the Add Device window, select **SW HDMI Series** from the **Device Names** drop-down menu.
5. From the **Connection Method** drop-down menu, select either **RS-232** or **USB**.

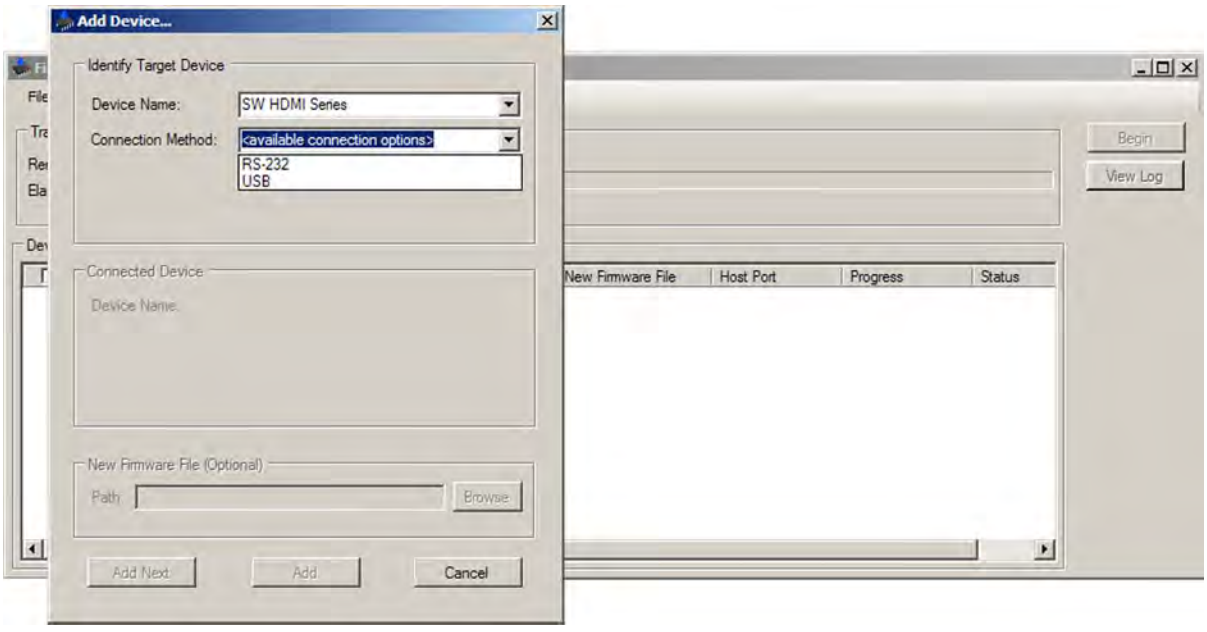


Figure 17. Connection Method Menu on the Add Device Window

6. Depending on the connection method that you selected, additional options appear. Make the appropriate selections for your connection method.
   - **RS-232:** Select the appropriate options from the **Com Port** and **Baud Rate** menus (this information is provided by your system administrator).
   - **USB:** Only the **Extron USB Device_0** option is available on the **Available Devices** menu. Make sure that it is selected.
7. Click **Connect**. If the connection is successful, SW HDMI Series is displayed in green in the Connected Device section, followed by a green check mark.
8. Click the **Browse** button in the New Firmware File (Optional) section.
9. On the Open window, navigate to the new firmware file, which has an **S19** extension, and double-click it.

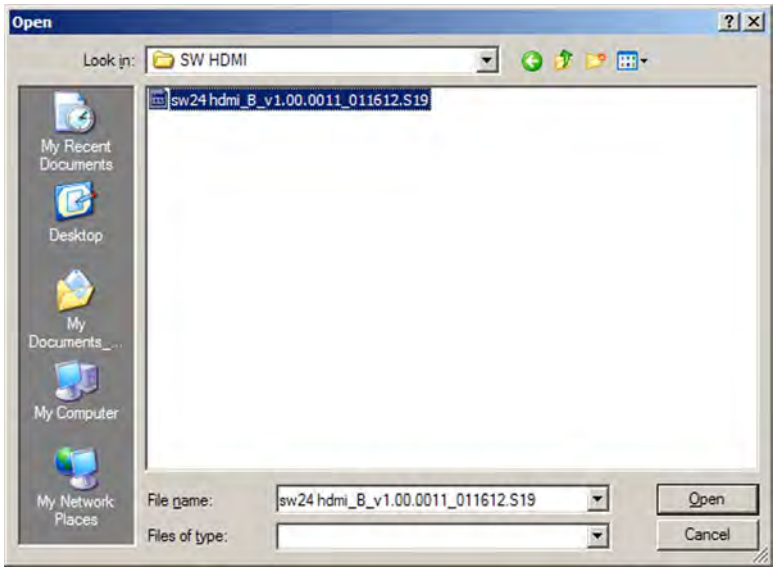


Figure 18. Open Window for Firmware File Selection

ATTENTION: Valid firmware files must have the file extension **S19**. A file with any other extension is not a firmware upgrade for this product and could cause the switcher to stop functioning.

NOTES:
- The original factory-installed firmware is permanently available on the SW HDMI. If the attempted firmware upload fails for any reason, the switcher reverts to the factory version.
- When downloaded from the Extron website, by default the firmware is placed in a folder at C:\Program Files\Extron\Firmware\SW HDMI (Windows XP) or C:\Program Files (x86)\Extron\Firmware\SW HDMI (Windows 7).

On the Add Device window, the path to the new firmware file is displayed in the **Path** field.

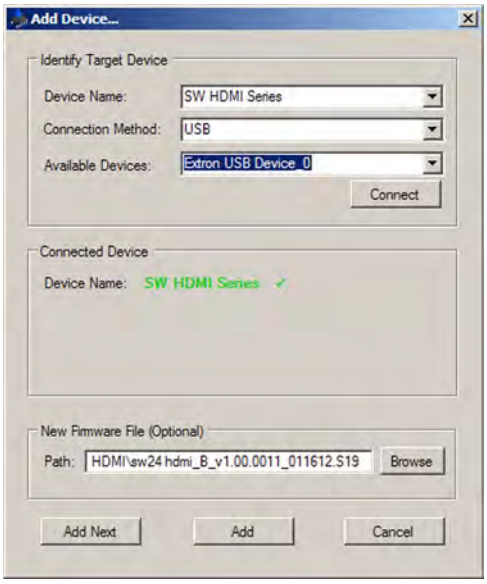


Figure 19. Path to the New Firmware File on the Add Device Window

10. **If this is the only device to which you are uploading firmware,** click **Add**. The switcher information is added to the Devices section of the Firmware Loader window and the Add Device window closes.

    If you will be uploading the firmware to multiple SW HDMI switchers that are connected to your computer, do the following:

    a. Click **Add Next**. Your first device is added to the Devices section of Firmware Loader window, and the Add Device window remains open.

    b. For each additional device you want to add to the Firmware Loader window, repeat steps **5** through **9**, then click **Add Next**.

    c. For the **last** device, click **Add** (instead of **Add Next**) to add the device and to close the Add Device window.

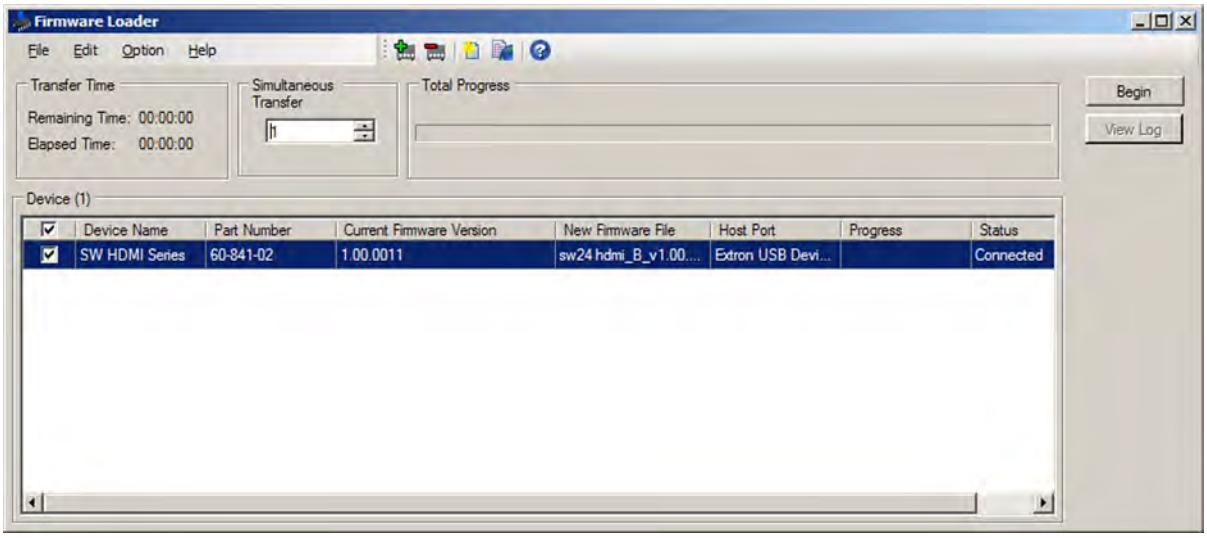


Figure 20. Firmware Loader Screen with an SW HDMI Added

11. If you want to remove a device from the Devices section, do the following:
    a. Click on the names of the devices to be deleted, to highlight them.
    b. Select **Remove Selected Device(s)** from the **Edit** menu.
    c. On the Remove Device(s) window, select or deselect any devices on the list as desired, then click **Remove**.

    To remove **all** devices, select **Remove All Devices** from the **Edit** menu.
12. Click **Begin**. The following indicators show the progress of the update:
    - The Transfer Time section shows the amounts of remaining and elapsed time for the update.
    - The Total Progress section displays a progress bar with `Uploading...` above it.
    - In the Devices section, the Progress column displays an incrementing percentage and another progress bar. The Status column displays `Uploading`.

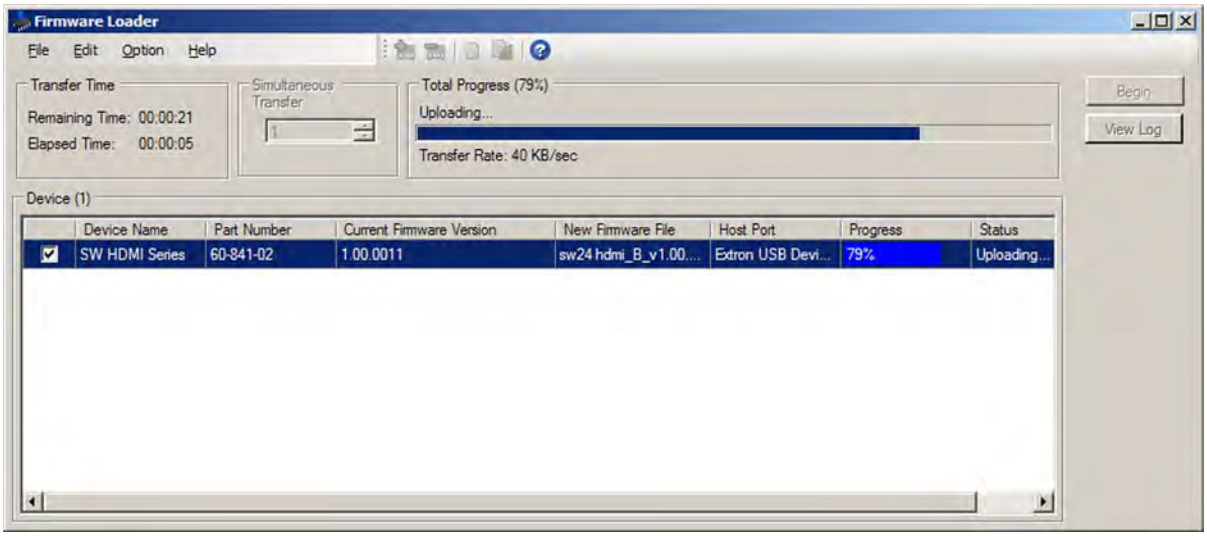


Figure 21. Firmware Upload in Progress

13. The upload is complete when the **Remaining Time** field shows `00.00.00`, the Progress column shows `100%`, and `Completed` is displayed above the progress bar and in the **Status** field. Close the Firmware Loader window.

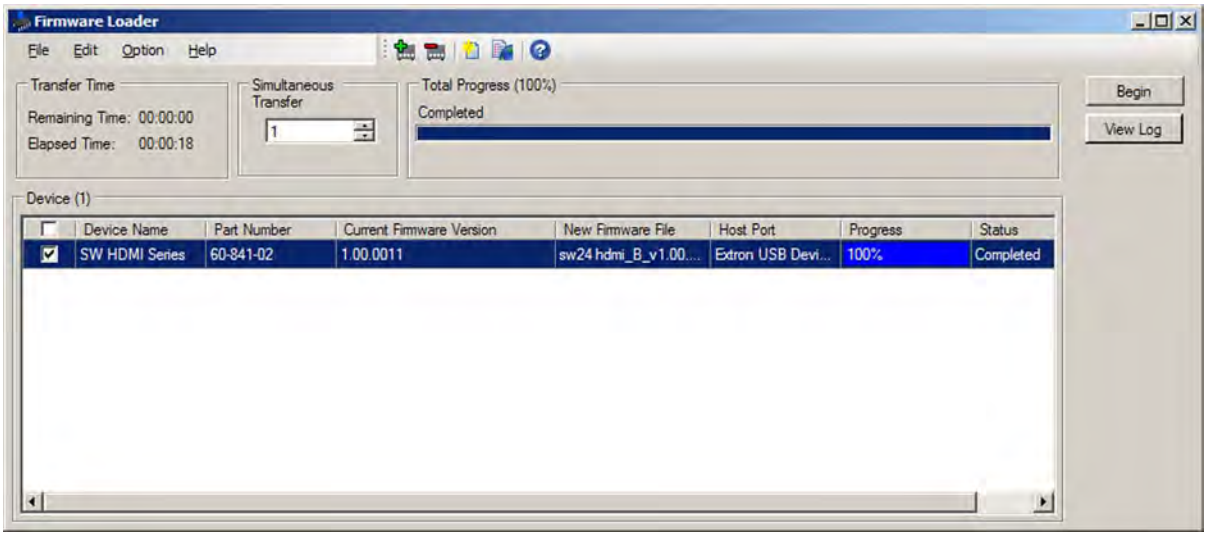


Figure 22. Firmware Upload Complete

Reference Information

This section reference information for the SW HDMI Series switchers. Topics that are covered include:

- **Specifications**
- **Part Numbers**
- **Mounting the SW HDMI**

Specifications

Video

Maximum data rate	6.75 Gbps (2.25 Gbps per color)
Maximum pixel clock	165 MHz
Resolution	Up to 1080p @ 60 Hz or 720p/1080i @ 120 Hz, 12-bit color
Formats	RGB and YCbCr digital video
Standards	DVI 1.0, HDMI, HDCP 1.4

NOTE: The SW HDMI Series switchers support TMDS data rates up to 6.75 Gbps, Deep Color up to 12-bit, 3D, HD lossless audio, and other HDMI specification features.

Video input

Number/signal type	2 or 4 (depending on model) single link HDMI (or DVI-D*)
Connectors	2 or 4 female HDMI type A

Video output

Number/signal type	1 single link HDMI (or DVI-D*)
Connectors	1 female HDMI type A

Control/remote — switcher

Serial control port	(1) RS-232, 3.5 mm captive screw connector, 5 pole (shared with autoswitching control)
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	1 = Tx, 2 = Rx, 3 = GND
Contact closure	(1) 3.5 mm captive screw connector, 5 pole (shared with RS-232)
Contact closure pin configurations	Pins 4 and 5 shorted together turn autoswitch mode on.
IR controller module	IR 102 remote control (optional) 30' maximum, 40 degrees off axis
Program control	Extron Simple Instruction Set (SIS™)

General

Power supply	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A, 12 watts
Power consumption	
Device	2.8 watts, 12 VDC
Device and power supply	3.8 watts, 12 VDC
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Thermal dissipation	
Device	9.2 BTU/hr
Device and power supply	12.6 BTU/hr
Mounting	
Rack mount	Yes, with optional 1U rack shelf
Furniture mount	Yes, with optional under-desk mounting kit or through-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	1.75" H x 8.75" W x 3.0" D (1U high, half rack wide) (4.4 cm H x 22.2 cm W x 7.6 cm D) (Depth excludes connectors.)
Product weight	0.5 lb (0.3 kg)
Shipping weight	2 lbs (1 kg
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
Environmental	Complies with appropriate requirements of RoHs and WEEE.
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTES:
- All nominal levels are at ±10%.
- Specifications are subject to change without notice.

Part Numbers

Included Parts

These items are included with the SW HDMI Series switcher:

Included Parts	Part Numbers
SW2 HDMI SW4 HDMI	60-841-01 60-841-02
PS 1210 C 12 VDC, 1 A external power supply	70-775-01
IEC power cord	
3.5 mm 2-pole captive screw power plug	100-454-01
(2) 3.5 mm 5-pole captive screw connectors	100-460-01
SW HDMI Series Setup Guide	
Extron Software Products DVD	
Rubber feet, self-adhesive (4, not attached)	

Accessories

These items are optional and may be ordered separately:

Accessories	Part Numbers
IR 102 Remote Control	70-224-10
RSU 129 9.5" deep 1U Universal Rack Shelf Kit	60-190-01
RSB 129 9.5" deep 1U Basic Rack Shelf	60-604-01
RSU 126 6" deep 1U Universal Rack Shelf Kit	60-190-10
RSB 126 6" deep Basic 1U Basic Rack Shelf	60-604-10
RSF 123 3.5" deep 1U Rack Shelf Kit	60-190-20
RSB 123 3.5" deep 1U Basic Rack Shelf	60-604-20
HRP 100 1U Half Rack Blank Panel	60-1251-01
HRB 109 1U Basic Half Rack Shelf	60-1251-10
HRU 109 1U Universal Half Rack Shelf Kit	60-1251-20
MBU 123 Mini Under-desk kit	70-212-01
MBB 100 Back of the Rack Kit	70-367-01

Cables and Adapters

The following table lists cables and adapters that are available for the SW HDMI Series. For a complete listing of cables, visit the Extron website at **www.extron.com**.

Cables	Part Numbers
HDMI M-M Pro HDMI Male-to-male Cables	26-650-xx
HDMI M-DVI-DM HDMI Male-to-DVI-D Male Cables	26-614-xx
HDMI Ultra Male-to-Male Cables	26-663-xx
MDC HDMI MicroDigital™ Cables	26-667-0x

Mounting the SW HDMI

The SW HDMI switcher can be set on a table, mounted on a rack shelf, or mounted under a desk, podium, or table.

Tabletop Use

Four self-adhesive rubber feet are included with the SW HDMI. For tabletop use, attach one foot at each corner on the bottom of the unit, and place the switcher where desired.

Rack Mounting

UL rack mounting guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the equipment in a rack.

1. **Elevated operating ambient temperature** — If the equipment is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (Tma = +122 °F, +50 °C) specified by Extron.
2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — When mounting the equipment in the rack, ensure that uneven mechanical loading does not cause a hazardous condition.
4. **Circuit overloading** — When connecting the equipment to the supply circuit, consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.
5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

Rack mounting procedures

See the **Accessories table** on page 31 for the available rack shelf kits and their part numbers.

Mounting on a rack shelf

1. If feet were previously attached to the bottom of the unit, remove them.
2. Mount the switcher on the rack shelf, using two 4-40 x 3/16 inch screws in opposite (diagonal) corners to secure the unit to the shelf (see **figure 23** on the next page).
3. Install blank panels or other units on the rack shelf as desired.
4. Install the shelf in the rack.

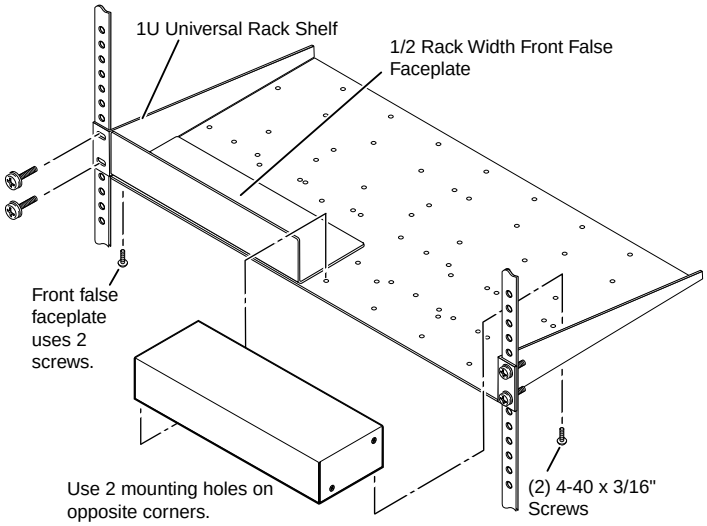

1U Universal Rack Shelf
1/2 Rack Width Front False Faceplate
Front false faceplate uses 2 screws.
Use 2 mounting holes on opposite corners.
(2) 4-40 x 3/16" Screws

Figure 23. Mounting an SW HDMI Switcher on a Standard 9.5-inch Deep Rack Shelf

Back of the rack mounting

The SW HDMI can also be mounted vertically to the front or rear rack supports, using the optional MBB 100 Back of the Rack Mounting Kit (part number 70-367-01) as follows:

1. If rubber feet were previously attached to the bottom of the unit, remove them.
2. Remove the two screws from each side of the switcher. Retain the screws for possible later reassembly.
3. Attach the brackets to the sides of the unit, using the longer screws included in the mounting kit (see figure 24).

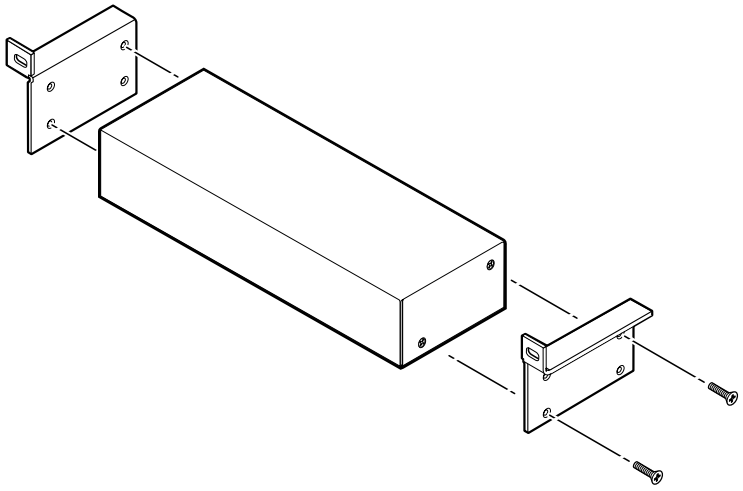


Figure 24. Attaching the Back of the Rack Mounting Brackets to an SW HDMI Switcher

4. Mount the switcher to the rack support, using the two included rack screws.

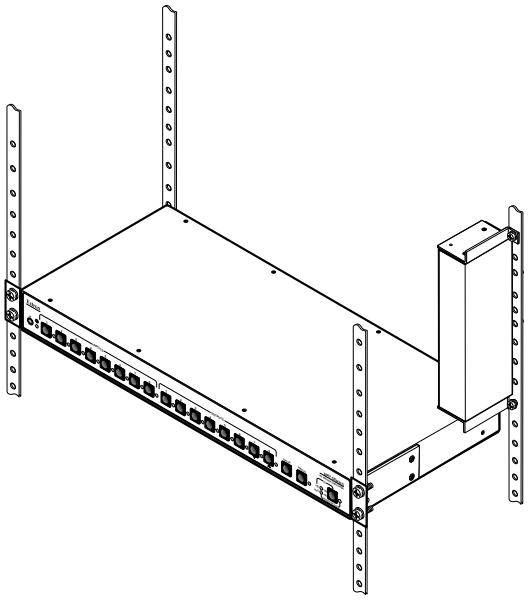


Figure 25. Mounting an SW HDMI Switcher to a Rack Support

Furniture Mounting

To mount an SW HDMI switcher under a desk, table, or podium, use the optional MBU 123 Mini Under-Desk Mounting Kit (part number 70-212-01) as follows:

1. If rubber feet were previously attached to the bottom of the unit, remove them.
2. Remove the two screws from each side of the switcher. Retain the screws for possible later reassembly.
3. Attach the brackets to the sides of the unit, using the provided machine screws.

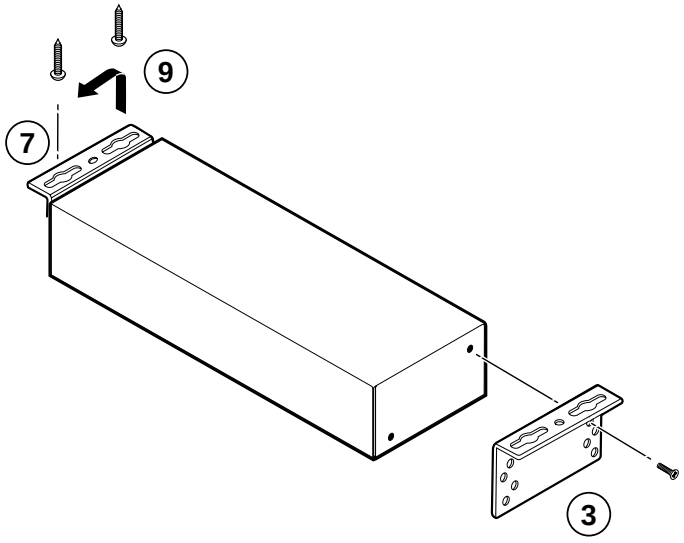


Figure 26. Preparing the SW HDMI Switcher for Under-desk Mounting

4. Hold the unit with the attached brackets against the underside of the table or other furniture. On the mounting surface, mark the location of the bracket screw holes.

5. Drill 3/32 inch (2 mm) diameter pilot holes, 1/4 inch (6.3 mm) deep, into the mounting surface at the marked screw locations.
6. Insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until slightly less than 1/4 inch of the screw head protrudes.
7. Align the centers of the slots in the brackets with the mounting screws and place the unit against the surface, with the screw heads through the bracket slots.
8. Slide the unit slightly forward or back, then tighten all four screws to secure it in place.

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:
Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe and Africa:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:
Extron Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876
Asia: 65.6383.4400
Europe: 31.33.453.4040
Japan: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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